The Single Induction Package Sorter Machine Deployment and Performance

AUDIT REPORT

Report Number 23-066-R23 | September 11, 2023

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Highlights

Background

During the COVID-19 pandemic, the Postal Service had workforce shortages while package volumes were surging, causing service performance for packages to suffer. In response to this critical situation, and to achieve its goal of expanding its share of the package delivery market, the Postal Service purchased and deployed new package sorting machines, including the Single Induction Package Sorter (SIPS).

What We Did

Our objective was to evaluate the U.S. Postal Service's strategic plan for and performance of the SIPS machine. To complete our evaluation, we reviewed the business case justification for the machines and analyzed package sorter usage data. We also conducted observations at judgmentally selected mail processing facilities, interviewed management, and determined reasons for high or low performance.

What We Found

The Postal Service successfully deployed the package sorters to increase sorting capacity, which reduced manual processing and improved service performance for packages. Additionally, the Postal Service is on track to achieve planned return on investment through improved package processing efficiency.

Overall, the Postal Service met the SIPS goals for pieces processed per hour on a nationwide average. However, 33 facilities did not meet this goal.

Further, we identified 21 package sorters that were significantly under used. This occurred because the Postal Service did not have a complete strategy to optimize processing after the initial deployment goals were met. We estimate the Postal Service incurred unnecessary cost by purchasing and underutilizing several SIPS machines. The underutilized SIPS machines represent $38.3 million in questioned costs.

Recommendations

We recommended management (1) determine if SIPS machines at facilities not meeting throughput goals are being used to optimize efficiency; and for those that are not, instruct facilities on how to use SIPS machines; and (2) develop and implement an official strategy for Single Induction Package Sorter machines to address underutilized machines.

Transmittal Letter

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

September 11, 2023

MEMORANDUM FOR: MIKE BARBER
VICE PRESIDENT PROCESSING AND MAINTENANCE OPERATIONS

FROM: Mary Lloyd
Deputy Assistant Inspector General
for Mission Operations

SUBJECT: Audit Report – The Single Induction Package Sorter Machine Deployment and Performance (Report Number 23-066-R23)

This report presents the results of our audit of The Single Induction Package Sorter Machine Deployment and Performance.

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Todd Watson, Director, Network Processing, or me at 703-248-2100.

Attachment

cc: Postmaster General
Corporate Audit Response Management

Results

Introduction/Objective

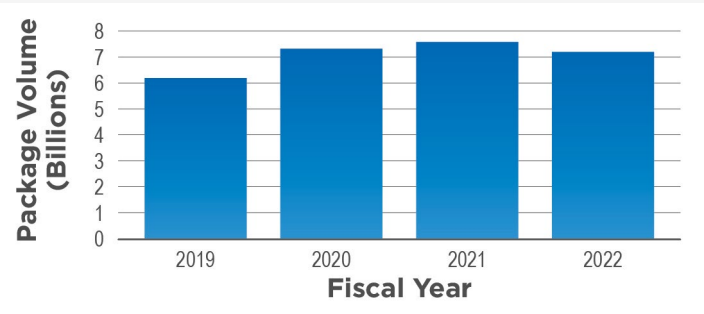
This report presents the results of our self-initiated audit of the Single Induction Package Sorter Machine Deployment and Performance (Project Number 23-066). Our objective was to evaluate the U.S. Postal Service's strategic plan and performance of the Single Induction Package Sorter (SIPS) machines. See Appendix A for additional information about this report.

Background

During the COVID-19 pandemic, the Postal Service experienced a significant workforce shortage along with a surge of package volume that exceeded machine sorting capacity in many mail processing facilities. At the same time, actual package volumes increased from approximately 6.2 billion packages in fiscal year (FY) 2019 to 7.2 billion (16 percent increase) in FY 2022 (see Figure 1). As a result, service performance declined significantly during the 2020 peak season,[1] when only 60 percent of First-Class packages were delivered on time in December 2020.

Additionally, according to its *Delivering for America* (10-year plan),[2] the Postal Service plans to expand its share of the package delivery market. In response to the service performance issue, and to execute its 10-year plan, the Postal Service deployed 185 package sorting machines to increase package sorting capacity in facilities across the country.

Figure 1. USPS Package Volume by Fiscal Year



Source: Fiscal Year 2021 and Fiscal Year 2022 Annual Report to Congress.

The SIPS was one type of machine deployed to mail processing facilities (see Figure 2). The SIPS machine automatically reads addresses and sorts packages into bins according to sort plans. The Postal Service deployed a total of 93 SIPS machines. From July 2021 to November 2021, 51 SIPS machines were deployed, and from March 2022 to October 2022, an additional 42 were deployed, for an average cost of approximately [redacted] per machine.[3]

Figure 2. Single Induction Package Sorter

Source: OIG photo taken at the Pennwood Place Processing & Distribution Center

According to Postal Service business case justifications, known as Decision Analysis Reports[4] (DAR), the SIPS increased service performance by processing packages in a more efficient and cost-effective manner compared to hiring more employees to process packages by hand. The DAR also established the performance goals for the SIPS, which included sorting 2,500 packages per machine hour (operating throughput[5]), and a productivity[6] goal of 325 packages processed per workhour.

1 Postal Service's peak mailing season begins each year in November and continues through January of the following year.
2 *Delivering for America* plan, published March 23, 2021.
3 Based upon capital and deployment expenses per machine in the *2022 SIPS Program*, dated April 18, 2022.
4 *Small Delivery Unit Sorter (SDUS) Program*, dated July 7, 2021, and *2022 SIPS Program*, dated April 18, 2022.
5 Throughput is the number of packages processed in an hour by a machine.
6 Productivity is the number of packages processed by the machine divided by workhours used to staff the machine.

This audit evaluated how the Postal Service used the SIPS machines and whether facilities were meeting performance goals. We judgmentally selected six facilities that were high, medium, or low performers regarding pieces processed per hour for review (see Table 1).

Table 1. Mail Processing Facilities Judgmentally Selected for Review

Facility	Processing Performance
Fayetteville, NC, Package Support Annex	High
Omaha, NE, Package Support Annex	High
Mid-Hudson, NY, Processing and Distribution Center	Medium
Fort Worth, TX, Processing and Distribution Center	Low
Jackson, MS, Processing and Distribution Center	Low
Columbia, SC, Processing and Distribution Center	Low

Source: OIG observations conducted between March and April 2023.

Finding #1: Postal Service Successfully Deployed Single Induction Package Sorters

We found the Postal Service successfully deployed 93 SIPS machines and met its initial goal to increase package processing capacity and is on track to exceed the planned return on investment. The deployed SIPS machines helped the Postal Service reduce manual package processing and the volume of delayed mail.

Manual Package Processing

The number of packages processed manually, and the workhours used to process those packages, dropped during and after the deployment of the 93 SIPS machines (see Figure 3). While other variables, such as the overall decrease in package volume, may have contributed to this decrease, based on the improved service performance during peak seasons for 2021 and 2022, it is reasonable to infer that deployment and use of SIPS machines contributed to reducing manual processing.

Figure 3. Nationwide Manual Package Processing

Source: Enterprise Data Warehouse Manual Workhours Report.

Package Service Performance

The Postal Service improved package service performance for the 2021 peak season while additional SIPS machines were being deployed. Service performance further improved for the 2022 peak season after the remaining SIPS machines were installed. Specifically, overall percentage of First-Class packages delivered on time increased from [redacted] percent in the 2020 peak season to [redacted] percent in the 2021 peak season, and to [redacted] percent in the 2022 peak season (see Figure 4).

Figure 4. Service Performance of First-Class Packages by Fiscal Year

Source: USPS service performance data.

Return on Investment

We found the SIPS deployment is exceeding the planned return on investment. According to the 2022 DAR,[7] the Postal Service planned to achieve a [redacted] return on investment for the most recent 37 SIPS machines deployed,[8] or [redacted] over about three years. As of December 31, 2022, the Postal Service reported a return on investment of [redacted]. Based on performance in the first quarter of FY 2023, we validated the return on investment and determined the Postal Service is on track to exceed the planned return on investment.

Finding #2: Single Induction Package Sorters Exceeded Throughput Goals on Average, but Not All Facilities Met Goals

Overall, the Postal Service exceeded the throughput goal of 2,500 pieces per hour when measured as a nationwide average for all SIPS machines. Specifically, between January 1, 2022, through June 30, 2023, the average throughput of all SIPS machines was 2,719 pieces per hour.

However, we found 33 facilities[9] of the 108 (31 percent) where the SIPS did not meet the throughput goal. During our site visits, two facilities were effectively using the SIPS in a way that maximized facility production but did not maximize SIPS throughput. For example, the SIPS was effective in processing packages that were too large for other package processing machines but required employees to lift packages with two hands to feed the machine, which slowed package processing and lowered throughput. However, local management stated by using the SIPS for larger packages, they reduced manual processing hours and improved facility service performance.

We also found instances where the SIPS was used as a supplemental machine for processing lower volume mail types without pausing faster machines, or to handle surges in volume to meet service performance. For example, two sites allowed faster machines to continue processing packages without interruptions by using the SIPS to run lower volume mail types that require additional machine setup time.

We found one low performing site that was understaffed. At times this site operated with one employee loading packages and one employee removing sorted packages as bins were full (sweeping). According to the SIPS Workbook,[10] to reach optimal throughput, it's recommended for the SIPS to be staffed with two employees loading and three employees sweeping.

During our site visits, we identified a best practice that was effective in increasing throughput. Several plant managers reported that a mechanical dumper and a belt were both effective at increasing throughput by mechanically loading packages onto the SIPS and creating more space for processing (see Figure 5). For example, in one facility we observed the average hourly throughput increased from 2,166 packages in calendar year 2022 to 2,578 in May 2023 after the addition of the mechanical dumper and belt.

Figure 5. Dumper and Belt

Source: OIG photo taken at the Pennwood Place Processing & Distribution Center
Note: Containers are placed in the yellow mechanical dumper which lifts and dumps the packages onto the feeder belt.

The Postal Service was also testing several solutions to increase throughput of SIPS machines. One solution is a machine enhancement [redacted] The Postal Service has also tested [redacted] According to the Postal Service, these enhancements could potentially increase the throughput to over 5,000 pieces per hour.

7 *2022 SIPS Program*, Dated April 18, 2022.
8 Remaining SIPS machines were included in a separate DAR that included other package processing equipment, and a combined return on investment plan did not break out returns specific to SIPS.
9 This analysis included 108 total facilities with the SIPS due to redeployment of the 93 total SIPS machines to multiple facilities from January 1, 2022, through June 30, 2023.
10 *SIPS Workbook* dated November 16, 2022.

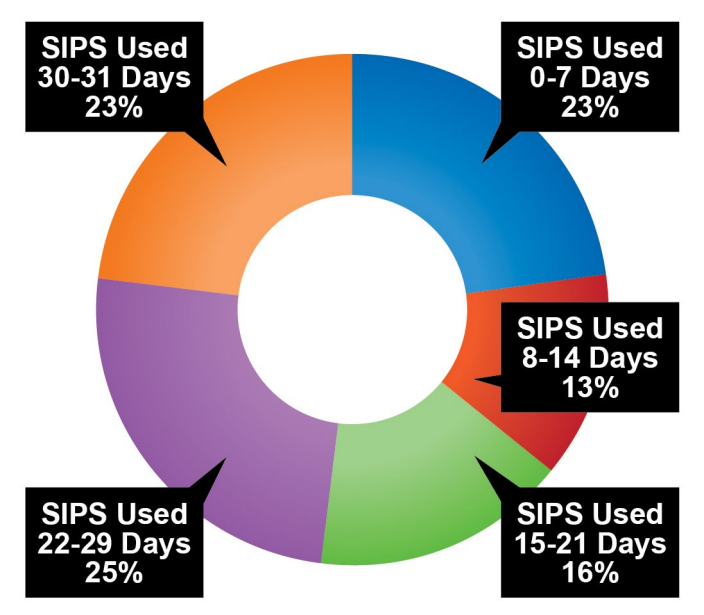
Recommendation #1

We recommend the **Vice President Processing and Maintenance Operations** determine if Single Induction Package Sorter (SIPS) machines at facilities not meeting throughput goals are being used to optimize efficiency, and for those that are not, instruct facilities on how to use SIPS machines.

Finding #3: Underutilized Single Induction Package Sorters

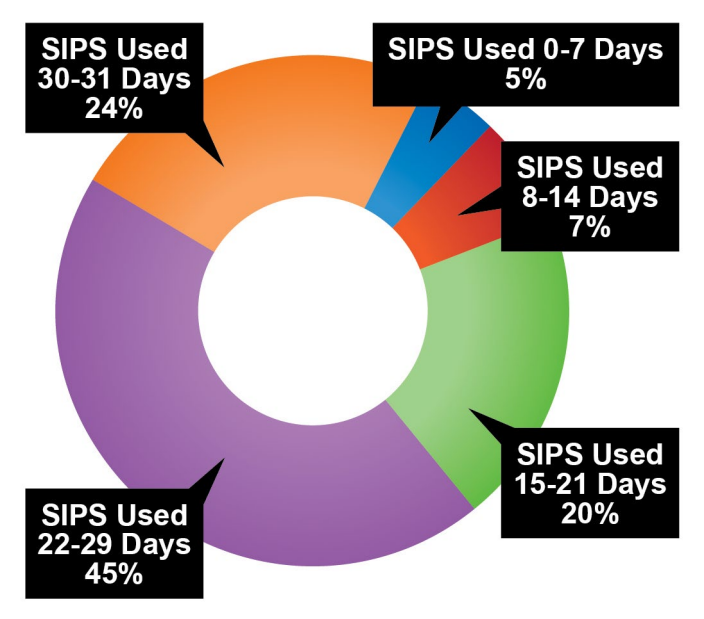
Several SIPS machines were underutilized or not being used at all. Specifically, between March 2023 and May 2023, 21 of 90[11] (23 percent) of SIPS machines were used on average seven days or less per month (see Figure 6). Even during the Postal Service's peak mailing season between November 2022 and January 2023, there were underutilized machines, with four of 85[12] (5 percent) SIPS machines used on average seven days or less per month, and an additional six of 85 (7 percent) SIPS machines were used on average between eight and 14 days per month (see Figure 7).

Figure 6. Average Monthly SIPS Usage From March 2023 to May 2023



Source: Material Handling System Run Report and Web End of Run.

Figure 7. Average Monthly SIPS Usage From November 2022 to January 2023



Source: Material Handling System Run Report and Web End of Run.

This occurred because the Postal Service did not have enough package volume at these locations where SIPS usage was low. Additionally, the Postal Service did not develop a complete strategy to optimize SIPS processing after the initial deployment goals were met. Postal Service management stated they plan to use idle SIPS machines to temporarily process packages while implementing the new regional processing and distribution centers[13] and sorting and delivery centers[14] during its network modernization efforts. Management added that redeployment will be in support of the network modernization effort and not reducing manual package volumes or workhours at a particular facility. According to the *10-year Plan Second-Year Progress Report*, six sorting and delivery centers have opened, four regional processing and distribution centers will be opened in 2023, and the Postal Service plans to open additional facilities in the future. However, the Postal Service has not provided the redeployment dates or locations of idle SIPS machines.

The Postal Service incurred unnecessary cost by purchasing and underutilizing several SIPS machines. The 21 currently underutilized SIPS machines represent $38.3 million in supported questioned costs.

11 This analysis of SIPS usage was pulled from Web End of Run and showed 90 active SIPS machines during March to May 2023. Three additional SIPS machines were inactive due to relocation or conversion to delivery operations as a Small Delivery Unit Sorter.
12 This analysis of SIPS usage was pulled from Web End of Run and showed 85 active SIPS machines during November 2022 to January 2023. Eight additional SIPS machines were inactive due to relocation or conversion to delivery operations as a Small Delivery Unit Sorter.
13 Regional processing and distribution centers are larger processing facilities that will sort all mail and packages that are being sent to other regions, as well as sort packages for delivery in the regional area.
14 Sorting and delivery centers are new delivery facilities that will aggregate mail carrier operations from several smaller current locations within local areas.

Recommendation #2

We recommend the **Vice President Processing and Maintenance Operations,** develop and implement an official strategy for Single Induction Package Sorter machines to address underutilized machines.

Management's Comments

Management partially agreed with the findings, disagreed with the monetary impact, disagreed with recommendation 1, and agreed with recommendation 2. See Appendix B for management's comments in their entirety.

Management agreed with the reported success of the deployment of the SIPS during the pandemic and agreed the SIPS met its initial goal to increase package processing capacity and is on track to exceed the planned return on investment. However, management disagreed with the statement they did not have a complete strategy to optimize processing after initial deployment goals were met. Management added that the SIPS machines are being used to add capacity for peak season and processing volume during network optimization realignments. Management also disagreed with the assumptions used to identify underutilized SIPS. Finally, management stated only throughput was evaluated as a performance metric, which is part of a system's performance and is highly dependent on external factors including normal season volume fluctuations.

Regarding the monetary impact, management disagreed with the questioned cost. Management provided data demonstrating most of the OIG identified plants were not suitable candidates for a SIPS.

Regarding recommendation 1, management stated that throughput was not the best indicator of success for SIPS machines and stated facilities have been instructed on how to use SIPS machines to optimize overall efficiency.

Regarding recommendation 2, management provided its ongoing analysis of SIPS machines, which showed that OIG identified potential sites were not suitable candidates for a SIPS machine. Management requested closure of this recommendation with the issuance of the final but also provided a target implementation date of March 31, 2024.

Evaluation of Management's Comments

The U.S. Postal Service Office of Inspector General (OIG) considers management's comments responsive to the two recommendations and corrective actions should resolve the issues identified in the report.

Regarding managements disagreement, we identified several underutilized SIPS machines, as noted in our report, because they did not have a complete strategy to optimize processing after initial deployment. While management did state their updated strategy is to redeploy SIPS machines to support network modernization efforts, they were unable to provide specifics on its strategy such as dates or locations for SIPS selected for redeployment.

Regarding managements disagreement with the monetary impact, the OIG's analysis was based on the cost of underutilized SIPS machines and not dependent on available locations to relocate underutilized SIPS machines. As stated in our report, the OIG identified 23 percent of SIPS machines were used on average seven days or less per month, which represented $38.3 million in questioned cost.

Regarding recommendation 1, as stated in the report, the DAR identified throughput as one of the metrics to determine success of the SIPS machine. Although management disagreed with this recommendation, they stated the facilities have been instructed on how to use SIPS to optimize overall efficiency. We followed up with management and confirmed facilities received these instructions, which is sufficient to implement and close this recommendation.

Regarding recommendation 2, management requested closure of this recommendation and provided a document that said sites identified by the OIG as having large amounts of manual package volumes were not suitable candidates for relocating SIPS machines. However, our recommendation was to develop and implement an official strategy to address underutilized SIPS machines. We will keep this recommendation open until the Postal Service provides documentation on its strategy to address underutilized SIPS machines.

All recommendations require OIG concurrence before closure. The OIG requests written confirmation when corrective actions are completed. Recommendation 2 should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that all recommendations can be closed. We consider recommendation 1 closed with the issuance of this report.

Appendices

Appendix A: Additional Information

Scope and Methodology

The scope of our audit was the performance of the SIPS between January 1, 2022, through June 30, 2023, and to determine if the machines were meeting performance goals. To accomplish our objective, we:

- Reviewed Postal Service Decision Analysis Reports for the 2021 Small Delivery Unit Sorter Program, the 2022 SIPS Program, and the 2021 High Output Package Sorter Program.
- Judgmentally selected and conducted observations from March 30, 2023, through April 18, 2023, using the Mail Image Reporting System Ranking Report for calendar year (CY) 2022. We selected facilities with constant machine usage in CY 2022 that had processed at least 1.5 million packages. Then, based on the run clock throughput goal of 2,200 as stated in the Small Delivery Unit Sorter DAR, dated July 7, 2021, we judgmentally selected two high performing facilities, three lower performing facilities, and one mid-performing facility. In addition, to select the interviews we used the Management Operating Data System Workhour Report and selected six facilities that had long periods of idle SIPS machine usage in 2022.
- Conducted site visits at six mail processing facilities to:
  - determine if they met performance goals as stated in the DAR.
  - identify the reasons for not meeting performance goals as stated in the DAR.
  - observe mail processing operations, such as staffing levels, loading, and sweeping.
  - interview plant manager, maintenance manager, and employees.
- Conducted interviews to determine reasons for low usage.
- Interviewed Postal Service Headquarters officials to determine SIPS deployment and usage plans.
- Analyzed Postal Service data on SIPS performance from January 1, 2022, to June 30, 2023.

We conducted this performance audit from March 2023 through September 2023 in accordance with the generally accepted government and auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. We discussed our observations and conclusions with management on August 15, 2023, and included their comments where appropriate.

In planning and conducting the audit, we obtained an understanding of the Postal Service's SIPS internal control structure to help determine the nature, timing, and extent of our audit procedures. We reviewed the management controls for overseeing the program and mitigating associated risks. Additionally, we assessed the internal control components and underlying principles, and we determined that the following two components were significant to our audit objective:

- Information and Communication
- Monitoring

We developed audit work to ensure that we assessed these controls. Based on the work performed, we identified internal control deficiencies that were significant within the context of our objectives. Our recommendations, if implemented, should correct the weaknesses we identified.

We assessed the reliability of computer-processed data from the Mail Image Reporting System by interviewing agency officials knowledgeable about the data and comparing the data with other related data. We determined that the data were sufficiently reliable for the purposes of this report.

Prior Audit Coverage

Report Title	Objective	Report Number	Final Report Date	Monetary Impact
Small Package Sorting System Performance	Evaluate the performance of the Postal Service's SPSS machines.	20-052-R20	July 29, 2020	$58.9 million
Automated Delivery Unit Sorter Cost Savings	Determine if the U.S. Postal Service's Automated Delivery Unit Sorter achieved projected cost savings.	20-095-R21	October 1, 2020	NA

Appendix B: Management's Comments

MIKE L. BARBER
VICE PRESIDENT
PROCESSING AND MAINTENANCE OPERATIONS

UNITED STATES
POSTAL SERVICE

August 28, 2023

JOHN CIHOTA
DIRECTOR, AUDIT SERVICES

SUBJECT: Management Response: The Single Induction Package Sorter Machine Deployment and Performance Report Number 23-066-DRAFT

Thank you for providing the Postal Service with an opportunity to review and comment on the findings and recommendations contained in the draft audit report, *The Single Induction Package Sorter Machine Deployment and Performance.*

The Postal Service agrees with the reported success of the deployment of package sorting machines, including the Single Induction Package Sorter (SIPS), improving service performance, and reducing costs during the unprecedented challenges of the pandemic and following years. Management also agrees that the SIPS met its initial goal to increase package processing capacity and is on track to exceed the planned return on investment.

Management disagrees with the statement that the Postal Service did not have a complete strategy to optimize processing after the initial deployment goals were met. USPS has utilized the SIPS to best serve the needs of the changing package environment, just as intended. The machines are being used for the planned purposes, which include adding capacity for peak season and processing volume during network optimization realignments. The Postal Service also disagrees with the assumptions used to identify "Underutilized" SIPS.

The stated objective of the audit is to evaluate the Postal Service's strategic plan and performance of the SIPS, but only throughput was evaluated as a performance metric. Throughput is only part of a system's performance and is highly dependent on external factors including normal seasonal volume fluctuations.

Management disagrees with the Questioned Cost in the Monetary Impact. The OIG assumes that every plant with a high volume of manual packages is a candidate for a SIPS, with no evaluation of whether the manual packages could be processed by a SIPS, whether there is space to install a SIPS, whether other

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package equipment is planned for the site, or whether the other package sorters in the facility could be utilized more effectively. The Postal Service provided data demonstrating that most of the identified plants were not suitable candidates for SIPS.

Following are our comments on each of the two recommendations.

Recommendation [1]:
We recommend the **Vice President Processing and Maintenance** determine if Single Induction Package Sorter (SIPS) machines at facilities not meeting throughput goals are being used to optimize efficiency, and for those that are not, instruct facilities on how to use SIPS machines.

Management Response/Action Plan:
Management **disagrees** with this recommendation. Throughput goals are not the best indicator of successful SIPS operations. Facilities have been and continue to be instructed on how to use SIPS machines to optimize overall efficiency.

Target Implementation Date: N/A

Responsible Official: N/A

Recommendation [2]:
We recommend the **Vice President Processing and Maintenance** develop and implement an official strategy for Single Induction Package Sorter machines to address underutilized machines.

Management Response/Action Plan:
Management **agrees** with this recommendation. USPS provided file "OIG 21 Site Assessment.xlsx" to the OIG on 8/16/23 as an example of the specifics of the ongoing analysis of underutilized machines.

Management requests closure at issuance of the final report.

Target Implementation Date: 03/31/2024

Responsible Official: Sr Directory Strategic Planning & Implementation

Mike L. Barber

Contact us via our Hotline and FOIA forms. Follow us on social networks. Stay informed.

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